DOCUMENT RESUME

ED 366 645 TM 021 056

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TITLE	Improving the Quality of Student Notes. ERIC/AE Digest.
INSTITUTION	ERIC Clearinghouse on Assessment and Evaluation, Washington, DC.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO	EDO-TM-93-1
PUB DATE	Oct 93
CONTRACT	RR93002002
NOTE	4p.
PUB TYPE	Guides - Non-Classroom Use (055) -- Information Analyses - ERIC Clearinghouse Products (071)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Academic Achievement; Encoding (Psychology); Higher Education; Instructional Effectiveness; *Lecture Method; *Memory; *Notetaking; Recall (Psychology); Secondary Education; *Student Participation; *Teaching Methods; Time Management; Writing Skills
IDENTIFIERS	ERIC Digests

ABSTRACT

Several recent investigations have suggested that students need help with their notes, as even successful students may fail to record many ideas communicated by the lecturer. Results also suggest that there is value in having students participate in the notetaking process in that they are more likely to remember what they have noted, even if full notes are provided by the instructor. Several studies have indicated that students are able to achieve more on tests when they are provided with partial notes to review. Several formats have been examined for partial notes, and it appears that skeletal notes, with the main ideas supplied and space left for students to fill in the gaps, are the most effective. Ideally, the instructor is advised to provide both skeletal notes before the lecture and detailed notes afterward to afford maximum benefits to the students. The disadvantages of detailed notes, particularly in terms of instructor time, mean that few will choose this option. It can also be argued that students should improve the quality of their own notes to enhance the learning process. Providing skeletal notes in increasing quantity as a function of the lecturer's increasing information density is a suggested compromise. (Contains 7 references.) (SLD)

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IMPROVING THE QUALITY OF STUDENT NOTES

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EDO-TM-93-1 October 1993

Improving the Quality of Student Notes

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Much of classroom learning at the secondary and postsecondary levels depends on understanding and retaining information from lectures. In most cases, students are expected to take notes and to review them in preparation for testing of lecture material. Such note-taking may serve a two-fold purpose: as a means of encoding the incoming information in a way that is meaningful for the listener, which serves to make the material more memorable from the outset (encoding function); and as a means of simply storing the information until the time of review (external storage function). Although these two purposes often have been treated as though they were mutually exclusive, several studies (e.g., Maqsud, 1980; Knight & McKelvie, 1986) point to a more complex relationship in which the two vary in their relative importance as a function of the individual, the material, and the review and testing conditions.

Do Students Need Help With Their Notes?

Based on several recent investigations, the answer to this question is a resounding "Yes." Of course, some students need more help than others do. Successful students' notes consistently include more of the important propositions, and more propositions overall (though not necessarily more words), than do less successful students' notes (Einstein, Morris, & Smith, 1985). But Kiewra's (1985) summary of the research in this area shows that even successful students generally fail to note many of the important ideas communicated by the lecturer. The best note-takers in these studies (third-year education majors in one study and "A" students in another) included fewer than three quarters of the critical ideas in their notes. First year students fared far worse: their notes contained only 11% of critical lecture ideas.

How Can Instructors Help?

Given that some of the most important information from lectures never is incorporated into students' notes, some means of helping students prioritize their note-taking certainly is in order. A continuum of approaches exists, from providing full or partial lecture notes to modifying one's lecturing style to facilitate students' own note-taking. None of these is optimal in every case. The type of learning (factual versus analytic or synthetic), the density of the information that must be covered, and the instructor's teaching style all should be considered carefully. The merits and drawbacks of each approach are discussed below.

Providing Full Notes

Kiewra (1985) reported that students who only review detailed notes provided by the instructor after the lecture generally do better on subsequent fact-based tests of the lecture than do students who only review their own notes. In fact, students who did not even attend the lecture but reviewed the instructor's notes scored higher on such tests than did students who attended the lecture and took and reviewed their own notes. This should not be surprising, because unlike the students' notes, the instructor's notes contain all the critical ideas of the lecture.

One might be tempted, however grudgingly, to conclude that providing students with full transcripts of lectures is the best way to optimize their learning of the material. After all, if the goal is to ensure that they don't miss the important ideas, what better way than to hand each student a full text of the lecture? But Kiewra cites evidence that students *remember* a greater proportion of the information in their own notes than in provided notes, and that students who take the same amount of time to review both their own and the instructor's notes perform best of all on fact-based tests. Interestingly, the pattern of superior performance with provided notes changes when the test involves higher-order learning (e.g., analysis and synthesis of ideas). In such cases, having the instructor's notes does not produce superior performance.

These results suggest that there is some value in having students participate in the note-taking process, however incomplete their notes may be. A more practical disadvantage to providing full notes is that they may defeat the purpose of the lecture itself. Even if this is not the case (e.g., if lectures serve as opportunities for discussion or other interactive forms of learning), the availability of full notes may encourage absenteeism among students who fail to recognize the additional benefits of attending lectures. These arguments, together with many instructors' understandable objections to preparing and providing full notes, make a compelling case for alternative approaches.

TM021056

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Providing Partial Notes: The Happy Medium

Several independent investigations (see Russell, Caris, Harris, & Hendricson, 1983; Kiewra, 1985; and Kiewra, DuBois, Christian, & McShane, 1988) have shown that students are able to achieve the most on tests when they are provided with only partial notes to review. Specifically, partial notes led to better retention than did comprehensive (full) notes or no notes, despite the fact that in Russell's study, students expressed an understandable *preference* for receiving full notes.

Several formats for partial notes have been examined, from outlines, to matrices, to skeletal guides. Of these, the skeletal format has gained the widest support (Hartley, 1978; Russell et al., 1983; Kiewra, 1985). In this format, the main ideas of the lecture are provided, usually including the hierarchical relationships between them (e.g., by arranging them in outline or schematic form), and spaces are left for students to fill in pertinent information, such as definitions, elaborations, or other explicative material, as they listen to the lecture. In Russell's study, students performed especially well with skeletal notes when the test emphasized practical, rather than factual, knowledge of the lecture material. They also remained more attentive during the lecture than did those with other kinds of notes, as evidenced by their higher scores on test-related items presented during each of the four quarters of the lecture period.

Hartley (1978) offered three conclusions from naturalistic research with skeletal notes:

1) Students who get skeletal kinds of notes take about half as many notes of their own, compared to students who are not given notes; yet, students who are given skeletal notes recall more.
2) The amount of space left for note-taking is a strong influence on the amount of notes that students take (i.e., the more space provided, the more notes taken).
3) Although skeletal notes lead to better recall than either the student's own notes or the instructor's notes, the best recall occurred when students received skeletal notes before the lecture and the instructor's detailed notes afterward. (Note the similarity between this finding and that in Kiewra's 1985 study.) Given the opportunities for analysis and synthesis when one has access to both sets of notes in this way, this result is to be expected.

Ideally, then, instructors would be advised to provide both skeletal notes before the lecture and detailed notes afterward in order to afford their students the maximum benefits. But the disadvantages associated with detailed notes have been discussed above, and given these, it seems unlikely that many educators would choose this option. Certainly, there are also those who would disagree in principle with provision of notes as a remedy for students' difficulties. Instead, it is entirely arguable that emphasis should be placed on helping students improve the quality of their own notes.

How Can Students' Own Notes Be Improved?

Kiewra (1985) offers several suggestions, based on his review of the literature. Some of these call for alterations in the presentation of the lecture. Instructors not only should speak slowly enough to allow students to note important ideas, but also should consider "segmenting" their lectures. Segmenting involves allowing pauses of three to four minutes for every six or seven minutes of lecture. This enables students to devote their attention to listening during the lecture and then to consolidate the important ideas and paraphrase them during the note-taking pauses. During the lecture phase, students need to be given cues not only to the importance of certain ideas, but also to the kinds of elaboration that they are expected to do on these ideas. In certain kinds of classes (e.g., medical school), where the amount of information that must be presented in a given time is relatively great, it may not be possible to segment the lectures, even though students stand to benefit most from segmenting in such cases. A suggested compromise is to keep information density low whenever possible (limiting the presentation of new ideas to 50% of the lecture time), and to provide skeletal notes in increasing quantity as a function of the lecture's increasing information density.

An additional suggestion by Kiewra (1985) is to encourage students to review not only their own notes, but other sources, such as other students' notes and outside texts. Exposure to a variety of renditions of the same material helps to ensure that the material will be preserved in at least one of the presented forms. It also increases the opportunities for more elaborative processing, as the sources are searched and integrated.

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This publication was prepared with funding from the Office of Educational Research and Improvement, U.S. Department of Education, under contract RR93002002. The opinions expressed in this report do not necessarily reflect the positions o policies of OERI or the U.S. Department of Education. **Permission is granted to copy and distribute this ERIC/AE Digest.**